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Scripps Clinic & Research Foundation v. Genentech Inc. (CA FC) 18 USPQ2d 1001 Scripps Clinic & Research Foundation v. Genentech Inc.

U.S. Court of Appeals Federal Circuit
18 USPQ2d 1001

Decided March 11, 1991
Nos. 89-1541, -1542, -1543, -1646, -1647

Headnotes

PATENTS

1. Patentability/Validity - Specification - In general (§ 115.1101)

Open-ended claims are not inherently improper; rather, their appropriateness depends upon particular facts of invention, disclosure, and prior art, and they may be supported if there is inherent, albeit not precisely known, upper limit and if specification enables one of skill in art to approach that limit.

2. Infringement - Defenses - Fraud or unclean hands (§ 120.1111)

Finding of intent is essential as matter of law to ruling of inequitable conduct, and such inequitable conduct must be deliberate and proved by clear and convincing evidence; thus, federal district court erred by granting summary judgment of inequitable conduct in view of court's own statement that its finding was "without implying improper motives" to inventors.

JUDICIAL PRACTICE AND PROCEDURE

3. Procedure - Summary judgment - In general (§ 410.3301)

Fact that both parties moved for summary judgment does not of itself establish that no disputed issue of fact exists and thus does not require that summary judgment be granted.

PATENTS

4. Practice and procedure in Patent and Trademark Office - Reissue - Error without deceptive intent (§ 110.1303)

Error of law is not excluded from class of error subject to correction in accordance with reissue statute, 35 USC 251, and, although attorney error is not open invitation to reissue in every case in which it may appear, purpose of statute is to avoid forfeiture of substantive rights due to error made without intent to deceive; statutory standard of reissuable error is objective, and does not require proof of subjective state of mind, nor does statute require showing that error in claiming product could not have been avoided, and thus inventors who established that they had claimed less than they had right to claim, that they had done so in error, and that there was no deceptive intention are entitled to reissue.

5. Patentability/Validity - Anticipation - In general (§ 115.0701)

JUDICIAL PRACTICE AND PROCEDURE

Procedure - Summary judgment - Patents (§ 410.3303)

Anticipation is question of fact, and finding of anticipation on motion for summary judgment requires federal district court to determine that no facts material to question are disputed, or that, even if all material factual inferences are drawn in favor of non-movant, there is no reasonable basis on which non-movant can prevail.

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6. Patentability/Validity - Anticipation - In general (§ 115.0701)

Use of extrinsic evidence to explain reference's disclosure is sometimes appropriate, in order to show what reference meant to persons of ordinary skill in art, but is necessarily of limited scope and probative value, since finding of anticipation requires that all aspects of claimed invention were already described in single reference, and such finding would not be supportable if it is necessary to prove facts beyond those disclosed in reference in order to meet claim limitations; if it is necessary to reach beyond boundaries of single reference to provide missing disclosure of claimed invention, proper ground is not anticipation under 35 USC 102 but obviousness under 35 USC 103.

7. Patentability/Validity - Anticipation - Prior publication (§ 115.0705)

JUDICIAL PRACTICE AND PROCEDURE

Procedure - Summary judgment - Patents (§ 410.3303)

Federal district court erred by granting summary judgment that claims were invalid for anticipation, based upon subject matter described in prior publication, since apparent inconsistencies among three declarations filed by publication's author raise questions of credibility and weight and thus were improperly resolved on summary judgment, and since, in patent cases, questioning by affidavit is disfavored and is inadequate substitute for trial with witnesses, who are subject to examination and cross-examination in presence of decision-maker.

PATENTS

8. Patentability/Validity - Specification - Best mode (§ 115.1107)

Compliance with best mode requirement is question of fact, and invalidity for failure of compliance requires proof by clear and convincing evidence that inventor knew of, and concealed, better mode of carrying out invention than was set forth in specification.

9. Patentability/Validity - Specification - Best mode (§ 115.1107)

Failure of inventor, of claims for process of purifying blood clotting factor VIII:C, to voluntarily place in depository antibody which was used in carrying out claimed process is not sufficient to warrant finding of invalidity for failure to comply with best mode requirement, since Patent and Trademark Office did not require such deposit during examination of patent either initially or on reissue, since no protestor raised issue of deposit in connection with reissue application, and since failure to make deposit voluntarily cannot constitute legal or factual basis for patent invalidity.

10. Infringement - Doctrine of equivalents - Reverse equivalents (§ 120.0703)

Federal district court erred by granting summary judgment of infringement of claims for process of purifying blood clotting factor VIII:C, in view of questions of scientific and evidentiary fact raised by accused infringer that could produce sufficient ground for invoking doctrine of reverse equivalents.

11. Infringement - Defenses - Fraud or inequitable conduct (§ 120.1111)

Reference which was considered by examiner cannot be deemed to have been withheld by applicant even if examiner discovered it "on his own."

12. Practice and procedure in Patent and Trademark Office - Prosecution - Duty of candor - In general

(§ 110.0903.01)

Infringement - Defenses - Fraud or inequitable conduct (§ 120.1111)

Applicant has absolute right to decline to do work suggested by Patent and Trademark Office, and to withdraw claims presented for examination, without incurring liability for inequitable conduct.

13. Infringement - Construction of claims (§ 120.03)

Patent construction - Claims - Process (§ 125.1309)

Correct reading of product-by-process claims, for infringement purposes, is that they are not limited to product prepared by process set forth in claims, since, for purposes of determining patentability, product is not limited by process stated in claims, and since claims must be construed in same way for validity and for infringement.

Particular patents - Chemical - Blood clotting factor

4,361,509 (Re. 32,011), Zimmerman and Fulcher, ultrapurification of Factor VIII using monoclonal antibodies, summary judgment of invalidity and infringement reversed.

Case History and Disposition:

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Appeal from the U.S. District Court for the Northern District of California,

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Schwarzer, J.; 3 USPQ2d 1481 , 6 USPQ2d 1018 , 11 USPQ2d 1187 , **and** 12 USPQ2d 1157 .

Consolidated patent infringement actions filed by Scripps Clinic & Research Foundation, Revlon Inc., and Rorer Group Inc. against Genentech Inc. and Miles Inc., and against Chiron Corp. From federal district court decision granting summary judgment on issues of invalidity and infringement, plaintiffs and Genentech cross-appeal. Affirmed in part, reversed in part, vacated in part, and remanded.

Attorneys:

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Judge:

Before Markey * and Newman, circuit judges, and Beer, district judge. †

Opinion Text

Opinion By:

Newman, J.

This litigation concerns a substance called human Factor VIII:C, a complex protein that occurs naturally in normal blood and is essential to the clotting of blood. The patent in suit, United States Reissue Patent No. 32,011 (the "R'011" patent), is entitled "Ultrapurification of Factor VIII Using Monoclonal Antibodies", inventors Theodore S. Zimmerman and Carol A. Fulcher. Assigned to Scripps Clinic and Research Foundation, it was licensed exclusively to Revlon, Inc. Subsequent to the filing of this suit Revlon sold its interest to Rorer Group, Inc.
By appeal and cross-appeal, the parties 1 raise various issues of patent validity and enforceability, infringement and inducement to infringe, and reissue law and practice, all of which were decided on motions for summary judgment. Each side challenges the decision of certain issues adverse to it, and the final judgment based thereon. 2

The Invention

Factor VIII:C, called the clotting or procoagulant factor, is found in all mammals, although it differs among species. It has been the subject of extensive scientific research, over many years. At the time the claimed invention was made, it was known that human Factor VIII:C is a complex protein produced by the Factor VIII:C gene and secreted into the blood stream. It occurs in normal blood plasma (plasma is the fluid fraction of blood) at a concentration of about 200 nanograms per milliliter. The total protein content of plasma is about 70 milligrams (0.070 gram) per milliliter; since a nanogram is one billionth of a gram, the total protein in plasma is 350,000 times greater than the Factor VIII:C protein in plasma. Most of the problems faced by researchers attempting to isolate Factor VIII:C were due to the amount and nature of the other proteins in the plasma.
It was known that in normal blood Factor VIII:C exists in complex association with another protein, named the "von Willebrand factor" or Factor VIII:RP (RP means "related protein"). The weight ratio of Factor VIII:C to

Factor VIII:RP in normal blood is about 1:100.

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Before the invention here at issue was made, scientists had succeeded in concentrating the Factor VIII:C in plasma. This concentrate has been used to replace transfusions of whole blood in the treatment of hemophilia. The process was expensive and, because of the large volume of whole blood needed as starting material, the possibility of contamination and disease from impurities in the source blood, the large amount of extraneous plasma proteins in the concentrate, and the large volume of concentrate that still had to be administered to the patient, there has been a continuing search for improvement. The record reflects the difficulties, over decades of research, in isolating and studying Factor VIII:C. Scripps reports that Genentech's scientists had been working in the field and had not isolated human Factor VIII:C in sufficient purity and amount to conduct successful characterization experiments. At the Scripps Clinic & Research Foundation, Dr. Zimmerman and Dr. Fulcher were studying Factor VIII:C from human and porcine blood. These scientists succeeded in isolating and, for the first time, characterizing Factor VIII:C, by a process of chromatographic absorption of the Factor VIII:C complex using monoclonal antibodies specific to Factor VIII:RP, followed by separation of the Factor VIII:C. 3 Monoclonal antibodies are produced by the cloned copies of a single hybridoma cell. A hybridoma is a hybrid cell that is immortal: that is, it does not die as do normal cells, but continues to reproduce clones that in turn produce a specific antibody. As described in the R'011 patent, the hybridoma was made by fusing a mouse spleen cell that produced the desired antibody to Factor VIII:RP, with a mouse cancer cell, which contributed the immortality. The patent describes the method of assay for clones producing antibodies to VIII:RP, their isolation, and preparation of the monoclonal antibodies for use as the immunoadsorbent.

The claimed process whereby the Factor VIII:C/VIII:RP complex is separated from the other materials in blood, followed by separation of the VIII:C from the VIII:RP, is described in the R'O11 patent and was summarized by Scripps as follows:

The first step involves the application of a solution containing Factor VIII complex (Factor VIII:C/Factor VIII:RP) to a column packed with agarose beads. Attached to the beads is a monoclonal antibody to Factor VIII:RP. The monoclonal antibody binds and immobilizes the Factor VIII:RP part of the Factor VIII complex while the non-Factor VIII materials simply pass through the column. A calcium salt solution is then applied to break the bond between the Factor VIII:C and the Factor VIII:RP. The Factor VIII:C is eluted from the column while the Factor VIII:RP remains bound to the antibody.

The procedure produces purified but dilute Factor VIII:C:

After this first step the Factor VIII:C is highly purified, but dilute. A second step to concentrate the Factor VIII:C solution may then be performed. This involves absorbing the Factor VIII:C on an aminohexylagarose column. The Factor VIII:C on the aminohexyl column is then eluted with a very small amount of calcium salt solution, resulting in a highly concentrated solution of highly purified Factor VIII:C.

The potency and activity 4 of the fractions obtained by this technique were summarized by Scripps as follows:

When the Factor VIII:C is eluted from either type of column it is collected serially in a number of small, individual portions called "fractions." When the Factor VIII:C is eluted from the monoclonal antibody column, for example, the initial fractions will have little VIII:C. The VIII:C increases as the Factor VIII:C is released. After the majority of Factor VIII:C has been released, the later fractions will contain decreasing amounts.

Table I in the Zimmerman patent contains an analysis of two individual fractions.

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Patent Fraction 3 has a potency of 1172 units/ml and a specific activity of 2294 units/mg. Patent Fraction 4 is from

another experiment and has a potency of 545 units/ml and a specific activity of 2370 units/mg.
Issues raised in this litigation concern purified Factor VIII:C and the reliability and reproducibility of the process, as these aspects relate to the validity, enforceability, and infringement of the R'011 patent claims.

The Claims

The claims in suit are product-by-process claims 13, 14, 17, 18, and 34, and product claims 24-29. Claim 13 is representative of the product-by-process claims:
13. Highly purified and concentrated human or porcine VIII:C prepared in accordance with the method of claim 1.
Claim 1 is:
1. An improved method of preparing Factor VIII procoagulant activity protein comprising the steps of
(a) adsorbing a VIII:C/VIII:RP complex from a plasma or commercial concentrate source onto particles bound to a monoclonal antibody specific to VIII:RP,
(b) eluting the VIII:C,
(c) adsorbing the VIII:C obtained in step (b) in another adsorption to concentrate and further purify same,
(d) eluting the adsorbed VIII:C, and
(e) recovering highly purified and concentrated VIII:C.
Product claims 24-29 were added by reissue, and are the focus of most of the controversy:
24. A human VIII:C preparation having a potency in the range of 134 to 1172 units per ml, and being substantially free of VIII:RP.
25. A human VIII:C preparation of claim 24, wherein the VIII:C concentration is at least 160,000 fold purified relative to VIII:C in plasma. 5
26. A human VIII:C preparation of claim 24, wherein the ratio of VIII:C to VIII:RP is greater than 100,000 times the ratio in plasma.
27. A human VIII:C preparation of claim 24, wherein said VIII:C is isolated from VIII:C/VIII:RP and 90-100 percent of the VIII:RP has been removed.
28. A human VIII:C preparation having a specific activity greater than 2240 units/mg.
29. A human VIII:C preparation of claim 28 wherein the potency is in the range of 134 to 1172 units/ml.

Summary Judgment

Summary judgment is a useful procedural tool whereby an unnecessary trial is avoided when there are no material facts in dispute. However, summary proceedings are not intended to substitute for trial when it is indeed necessary to find material facts. *Meyers v. Brooks Shoe, Inc.*, 912 F.2d 1459, 1461, 16 USPQ2d 1055, 1056 (Fed. Cir. 1990) ("the factual dispute should be reserved for trial"). A factual question is material if a reasonable jury could return a verdict for the nonmoving party based at least in part on its determination of the factual question. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986). In determining whether there is a genuine issue of material fact, the evidence must be viewed in the light most favorable to the opponent of the motion, *Poller v. Columbia Broadcasting System, Inc.*, 368 U.S. 464, 473 (1961), and doubts resolved in favor of the opponent. *Cantor, dba Selden Drugs Co. v. Detroit Edison Co.*, 428 U.S. 579, 582 (1976).
A motion for summary judgment must be supported with a sufficient showing to establish that there is no genuine issue of material fact and that the moving party is entitled to judgment as a matter of law. Fed.R.Civ.P. 56(c); *Celotex Corp. v. Catrett*, 477 U.S. 317, 325 (1986). The burden of establishing entitlement to summary disposition is with the movant, with due consideration to the burden of proof. *Id.* When a sufficiently supported motion has been submitted, the burden of coming forward and showing that there is a genuine issue of material fact shifts to the nonmovant. The Court has observed that "all that is required is that sufficient evidence supporting the claimed factual dispute be shown to require a jury or judge to resolve the parties' differing versions of the truth at trial." *Anderson*, 477 U.S. at 249 (quoting *First National Bank of Arizona v. Cities Service Co.*, 391 U.S. 253, 288-289 (1968)). However, "[i]f the evidence is merely colorable, or is not significantly probative, summary judgment may

be granted". *Anderson,* 477 U.S. at 249-50 (citations omitted).

Scripps and Genentech both argue that certain issues that were decided summarily against each of them were not resolvable on summary judgment in favor of the other, if Rule 56 were correctly applied. We have concluded that the district court was correct in its determination, as to some of the issues in suit, that there were no questions of material fact; but not for all issues. For those issues that could indeed be decided summarily, we have reviewed the decision for correctness as a matter of law. For those issues on which summary judgment was inappropriately granted, we have reversed the grant and remanded for trial.

I.

Inequitable Conduct and Enablement

On the basis of statements that the inventors made to the reissue examiner in connection with prosecution of the newly added product claims, issued as claims 24-29 of the R'011 patent, the district court granted Gentech's motion for summary judgment of unenforceability of the claims based on inequitable conduct.

Although the court did not hold the claims invalid for lack of enablement, the issues of enablement and inequitable conduct were intertwined. The "enablement" requirement is set forth in Title 35 as follows:

35 U.S.C. §112 ¶ *1.* The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same. ...

The purpose of this provision is to assure that the inventor provides sufficient information about the claimed invention that a person of skill in the field of the invention can make and use it without undue experimentation, relying on the patent specification and the knowledge in the art. *See United States v. Telectronics, Inc.,* 857 F.2d 778, 785, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988), *cert. denied,* 109 S.Ct. 1954 (1989).

During prosecution of the reissue application the patent examiner had raised various questions under §112, relating to the purity of the Factor VIII:C that was the subject of the proposed product claims. Communications from the inventors covered such matters as the presence of fibrinogen and fibronectin and their removal by those skilled in the art; variations in chromatographic purification results; and the determination of purity using SDS-gels. The examiner requested a showing of the mathematical relationship between specific activity and fold purification, and other data, which the inventors provided.

The reissue examiner's objection to the scope of the product claims was withdrawn on the inventors' response that they had obtained human Factor VIII:C at "levels closely approaching the theoretical limit". The inventors explained that the difference in fold purification of about 169,000 shown in Table I, and their calculation of the theoretical value of 357,000-fold, was 2-fold, from which the inventors stated that the "specification teaches those skilled in the art the production of essentially pure VIII:C." They explained that the removal of any remaining fibrinogen and fibronectin was within the skill of the art, when these impurities were identified. The examiner, apparently satisfied with the inventors' answers, 6 granted the reissue application with the added product claims as amended.

[1] The inventors distinguished the case of *In re Fisher,* 427 F.2d 833, 166 USPQ 18 (CCPA 1970), which held the open-ended claims there presented unpatentable for lack of enablement of "future compositions having potencies far in excess of those obtainable from his teachings plus ordinary skill". *Id.* at 839, 166 USPQ at 24. Open-ended claims are not inherently improper; as for all claims their appropriateness depends on the particular facts of the invention, the disclosure, and the prior art. They may be supported if there is an inherent, albeit not precisely known, upper limit and the specification enables one of skill in the art to approach that limit. *See Fisher,*

supra.

While Genentech argues that the issue is whether the inventors misrepresented the purity of their Factor VIII:C, Scripps points out that the claims do not require 100% pure VIII:C. The product-by-process claims all refer to "highly purified and concentrated" VIII:C, and the product claims contain limitations that are met by less than 100% pure VIII:C: for example, that the VIII:C is "at least 160,000 fold purified relative to VIII:C in plasma" (claim 25), that "the ratio of VIII:C to VIII:RP is greater than 100,000 times the ratio in plasma" (claim 26), that the VIII:C product has a potency of 134-1172 units/ml (claim 24) or a specific activity of over 2400 units/mg (claim 28), and is substantially free of VIII:RP (claims 24-27).

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Indeed, the district court did not find that all these claim limitations depended on the criticized representations about purity that were made to the examiner. However, the court found that the inventors' statements about the purity of the product were unsupported by evidence, and on this basis adjudged all the claims unenforceable for inequitable conduct.

The court referred to a Declaration by Drs. Zimmerman and Fulcher, during prosecution of the reissue application, that "we have achieved purified VIII:C at levels very near what we believe to be the theoretical values with the claimed process." The court found that "Drs. Zimmerman and Fulcher made crucial factual assertions, for the purpose of reversing the Examiner's initial rejection of the open-ended purity claims, for which they had no factual support." The court stated at the hearing that the inventors made statements about purity for which they did not have evidence:

THE COURT: ... and without implying improper motives it is an issue [purity] on which the inventors did not seem to have evidence but without evidence they created the - well, you say they made a square statement saying that almost always will you get pure VIII:C when, in fact, they didn't know that you would almost always get pure VIII:C.

The district court expressed its concern about the inventors' knowledge of the reliability of the process:

THE COURT: Mr. Feiler, I'm not questioning that they got pure C, they have gotten lots of pure C. What they did not know was what is the probability of getting VIII:C every time you run one of these columns. What percentage of the fractions that come out will be pure VIII:C. They just didn't know.

This reasoning is reflected in the court's finding:

he undisputed evidence shows that (1) only some of the fractions appeared to be free of fibronectin while others were not, (2) the inventors were unable to quantify how much fibronectin the stream of the product from the column contained, and (3) the fraction on which the patent application (Table I) was based contained up to 50% fibronectin.

Scripps, 707 F.Supp. at 1557, 11 USPQ2d at 1196.

Scripps stated that the inventors' statements to the examiner were justified, that the inventors believed them to be correct, that there was evidence before the district court that the inventors obtained gels showing essentially pure Factor VIII:C, and that the inventors obtained immunological tests showing no evidence of fibronectin or fibrinogen. Scripps argued that the inventors had the good faith belief that they had enabled the preparation of pure Factor VIII:C, and referred to evidence of contemporaneous correspondence from Dr. Zimmerman to other scientists that "We believe that purification of the human VIII:C is essentially complete". There were declarations filed with the district court, of Dr. Katzmann (a scientist at Revlon) and Dr. Hrinda (a scientist at Rorer), that the inventors had obtained essentially pure Factor VIII:C. Dr. Katzmann also explained that Factor VIII:C activity can vary in samples having the same degree of purity; Genentech's data showed the same effect. There was deposition testimony on tests by Dr. Fulcher, showing no fibronectin.

Genentech asserts that the inventors deliberately withheld an analysis of the Table I material after the examiner requested it, and misrepresented that the impurities were "trace" when in fact the materials described in the

specification contained 50% fibrinogen and fibronectin. Scripps responds that the requested analysis of the Table I material was indeed provided, that the examiner understood and was not misled by the inventor's statements about purity, that additional evidence showed that the representations made to the examiner were scientifically correct, and that, in all events, the statements were made in good faith.
The district court placed substantial weight on Dr. Zimmerman's deposition testimony that "trace contaminants" fibrinogen and fibronectin remained, that he "did not have numbers for upper limits", and that "[i]t is a trivial matter to remove the fibrinogen and fibronectin once they have been identified". The court commented that "Dr. Fulcher in her deposition was unable to quantify [the term 'essentially pure'] or the term 'highly purified'", and remarked that it is "impossible to extrapolate from one or several Laurells [tests of a fraction of the column stream] as to the degree of purity of the entire output". The court criticized these scientific facts as legal inadequacies. The court appeared to require greater scientific precision than did any of the scientists whose testimony was presented. The statute, however, is directed to persons of skill in the field of the invention. Indeed, Genentech provided no evidence that one of skill in the field of this invention could not make and use a product satisfying all the limitations of the claims, by following the inventors' disclosure and the knowledge of the art. Neither evidence nor expert opinion to this effect was offered.

[2] The materiality of a representation, and whether the representation was made with intent to deceive or mislead, are the two essential factual predicates to determination of inequitable conduct. *Modine Mfg. Co. v. Allen Group, Inc.*, 917 F.2d 538, 541, 16 USPQ2d 1622, 1624 (Fed. Cir. 1990). The district court stated that the "three elements of inequitable conduct" are "material prior information, chargeable to applicant, not disclosed to the PTO". *Scripps*, 707 F.Supp. at 1557, 11 USPQ2d at 1196. Notably missing is the element of intent, essential as a matter of law to a ruling of inequitable conduct. *See Kingsdown Medical Consultants, Ltd., v. Hollister, Inc.*, 863 F.2d 867, 876, 9 USPQ2d 1384, 1392 (Fed. Cir. 1988). Conduct that requires forfeiture of all patent rights must be deliberate, and proved by clear and convincing evidence. While Genentech argues that absence of reference by the court to intent does not mean that the court did not find intent, the court's remark that it was "without implying improper motives [to the inventors]" contravenes this argument. Even were the inventors' statements concerning purity in error, a finding of disputed fact that is not appropriate on summary judgment, the absence of a finding of intent to deceive or mislead the examiner precludes summary judgment of inequitable conduct. *See KangaROOS U.S.A., Inc. v. Caldor, Inc.*, 778 F.2d 1571, 1573, 228 USPQ 32, 35-36 (Fed. Cir. 1985) (a disputed question of intent to deceive is not appropriate for summary resolution).
The grant of partial summary judgment of unenforceability of the R'011 claims for inequitable conduct is reversed.
[3] Scripps had filed a cross-motion for summary judgment on this issue. This does not, of itself, require adjudication in its favor. *United States v. Fred A. Arnold, Inc.*, 573 F.2d 605, 606 (9th Cir. 1978); *accord, Cram v. Sun Insurance Office, Ltd.*, 375 F.2d 670, 673-74 (4th Cir. 1967) ("The fact that both sides moved for summary judgment does not establish that there is no issue of fact and require that judgment be granted for one side or the other"). These disputed factual questions of materiality and intent, which depend on the assessment of scientific facts as well as on the credibility of witnesses, are not amenable to summary resolution. The issue is remanded for trial.

II

35 U.S.C. §251

A

The R'011 patent is a reissue of Patent No. 4,361,509 ("the '509 patent"), granted on November 20, 1982.

Genentech challenged the adequacy of the patentee's reason for seeking reissue, stating that this reason was insufficient in terms of 35 U.S.C. §251. On this ground the district court granted Genentech's motion for partial summary judgment of invalidity of claims 17, 18, 24-29, and 34.

Although there were factual aspects debated by the parties, they are not material to the question of the legal adequacy of the patentee's reason for requesting reissue. That is a question of law, and the facts material to that question were not in dispute. The matter could have been, and was, decided summarily. *See Paperless Accounting, Inc. v. Bay Area Rapid Transit Sys.*, 804 F.2d 659, 662, 231 USPQ 649, 651 (Fed. Cir. 1986), *cert. denied,* 480 U.S. 933 (1987) ("These facts are not in dispute, though their legal significance is. Thus the basis on which the district court decided the question was amenable to summary judgment"). However, the district court erred in its conclusion of law.

The reissue statute provides in part:

35 U.S.C. §251. Whenever any patent is, through error without any deceptive intention, deemed wholly or partly inoperative or invalid, by reason of a defective specification or drawing, or by reason of the patentee claiming more or less than he had a right to claim in the patent, the Commissioner shall ... reissue the patent for the invention disclosed in the original patent, and in accordance with a new and amended application.... No new matter shall be introduced into the application for reissue.

In accordance with 37 C.F.R. §1.175(a)(5) and (a)(3) the applicant for reissue must "specify[] the errors relied upon, and how they arose or occurred," and must "distinctly specify[] the excess or insufficiency in the claims"; and in accordance with 37 C.F.R. §1.175(a)(6) the applicant must declare the absence of deceptive intention.

The principal error that the inventors sought to cure was the claiming of "less than [they] had a right to claim in the patent" due to the omission of product claims. The '509 patent contained only process and product-by-process claims. 7 In the reissue application inventors Zimmerman and Fulcher declared that they had always viewed the Factor VIII:C product as their invention, pointing out that the '509 specification stat

ed that it was an object of their invention to produce highly purified Factor VIII:C.

[4] An error of law is not excluded from the class of error subject to correction in accordance with the reissue statute. Although attorney error is not an open invitation to reissue in every case in which it may appear, *see In re Weiler,* 790 F.2d 1576, 1579, 229 USPQ 673, 675 (Fed. Cir. 1986) ("not every event or circumstance that might be labeled 'error' is correctable by reissue"), the purpose of the reissue statute is to avoid forfeiture of substantive rights due to error made without intent to deceive. *See generally Ball Corp. v. United States,* 729 F.2d 1429, 1939 n.28, 221 USPQ 289 , 296 n.28 (Fed. Cir. 1984) (the reissue statute "is based on fundamental principles of equity and fairness").

When the statutory requirements are met, reissuance of the patent is not discretionary with the Commissioner; it is mandatory ("shall"). *See In re Handel,* 312 F.2d 943, 948, 136 USPQ 460, 464 (CCPA 1963) ("the whole purpose of the statute, so far as claims are concerned, is to permit limitations to be added to claims that are too broad or to be taken from claims that are too narrow").

Genentech does not dispute that error was made, and does not challenge the principle of the availability of product claims to the purified Factor VIII:C. Further, Genentech does not assert that the attorneys' initial view of the unavailability of product claims involved any deceptive intention. The district court, holding that there was insufficient reason for reissue, appeared to interpret §251 as requiring a showing that the error in claiming the product could not have been avoided, in order to be eligible for cure. This is not the framework of the reissue statute.

The law does not require that no competent attorney or alert inventor could have avoided the error sought to be corrected by reissue. Failure of the attorney to claim the invention sufficiently broadly is "one of the most common sources of defects". *In re Wilder,* 736 F.2d 1516, 222 USPQ 369 (Fed. Cir. 1984), *cert. denied,* 469

U.S. 1209 (1985):
An attorney's failure to appreciate the full scope of the invention is one of the most common sources of defects in patents. The fact that the error could have been discovered at the time of prosecution with a more thorough patentability search or with improved communication between the inventors and the attorney does not, by itself, preclude a patent owner from correcting defects through reissue.
Id. at 1519, 222 USPQ at 371.
Subjective intent is not determinative of whether the applicants erred in claiming less than they had a right to claim. *In re Mead,* 581 F.2d 251, 255, 198 USPQ 412, 416 (CCPA 1978). "Intent to claim" is not the criterion for reissue, and has been well described as "but judicial shorthand, signifying a means of measuring whether the statutorily required *error* is present." *In re Weiler,* 790 F.2d 1576, 1581, 229 USPQ 673, 676 (Fed. Cir. 1986) (emphasis in original). The statutory standard of reissuable error is objective, and does not require proof of subjective state of mind:
Determining what protection [an inventor] intended to secure by [an] original patent for the purposes of §251 is an essentially factual inquiry confined to the *objective* intent manifested by the original patent.
In re Rowand, 526 F.2d 558, 560, 187 USPQ 487, 489 (CCPA 1975) (emphasis in original).
On undisputed facts, the inventors established that they had claimed less than they had a right to claim, that they had done so in error, and that there was not deceptive intention. The application for reissue fully complied with the statutory and regulatory requirements. 8
As a matter of law, reissue claims 17, 18, 24-29, and 34 are not invalid on this ground. The grant of partial summary judgment is reversed. On remand, partial summary judgment shall be entered for Scripps on this ground.

B

The district court had also held the reissue product claims invalid for inadequate support in the specification for their open-ended scope, referring to changes that Drs. Zimmerman and Fulcher made in the text of the specification during the drafting process. For example, they changed "virtually pure" to "highly purified"; and inserted "largely" before "free of contaminants". This is an issue of enablement, which is not challenged by Genentech; but it also raises questions of claim interpretation in light of the specification. In view of the several disputed questions of material fact underlying these issues, see Part I *ante* and Part V *post,* summary judgment on this ground was improper, and the

grant thereof is reversed. This issue, also, requires trial.

III

Anticipation

The district court held, on cross-motions for summary judgment, that "it had been proved by clear and convincing evidence" that claims 24, 26, and 27 were invalid for anticipation, 35 U.S.C. §102(b), based on subject matter described in a 1979 dissertation by Robert B. Harris entitled "Isolation and Characterization of Low Molecular Weight, Non-Aggregated Antihemophilic Factor from Fresh Human Plasma".

A

[5] Anticipation is a question of fact. *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.,* 758 F.2d 613, 619, 225 USPQ 634, 637 (Fed. Cir.), *cert. dismissed,* 474 U.S. 976 (1985). To make such finding on summary judgment, the court must determine that no facts material to the question are disputed; or that even if all material factual inferences are drawn in favor of the non-movant, there is no reasonable basis on which the non-movant can prevail. *Cooper v. Ford Motor Co.,* 748 F.2d 677, 679, 223 USPQ 1286, 1288 (Fed. Cir. 1984). The standard of

proof that would have to be met at trial must be considered. *Anderson,* 477 U.S. at 257.
Invalidity for anticipation requires that all of the elements and limitations of the claim are found within a single prior art reference. *Carella v. Starlight Archery and Pro Line Co.,* 804 F.2d 135, 138, 231 USPQ 644, 646 (Fed. Cir. 1986); *RCA Corp. v. Applied Digital Data Systems, Inc.,* 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention.
[6] It is sometimes appropriate to consider extrinsic evidence to explain the disclosure of a reference. Such factual elaboration is necessarily of limited scope and probative value, for a finding of anticipation requires that all aspects of the claimed invention were already described in a single reference: a finding that is not supportable if it is necessary to prove facts beyond those disclosed in the reference in order to meet the claim limitations. The role of extrinsic evidence is to educate the decision-maker to what the reference meant to persons of ordinary skill in the field of the invention, not to fill gaps in the reference. *See Studiengesellschaft Kohle, mbH v. Dart Industries, Inc.,* 726 F.2d 724, 727, 220 USPQ 841, 842 (Fed. Cir. 1984) (although additional references may serve to reveal what a reference would have meant to a person of ordinary skill, it is error to build "anticipation" on a combination of these references). If it is necessary to reach beyond the boundaries of a single reference to provide missing disclosure of the claimed invention, the proper ground is not §102 anticipation, but §103 obviousness. Indeed, a publication on the Harris dissertation was included in the prior art statement filed by Scripps and was a cited reference under §103.

B

In the summary judgment proceedings the parties filed three successive declarations of Dr. Harris, each explaining his dissertation. In the first declaration, filed by Miles, Inc., Harris stated that he isolated "a low molecular weight antihemophilic factor". In his second ("supplemental") declaration, filed by Scripps, Harris described this factor as not a naturally occurring substance, and of low specific activity:
6. The material I identified as low molecular weight antihemophilic factor (LMW-AHF) was not a naturally occurring substance. The material of my dissertation is the result of reacting plasma with a reducing agent called dithiothreitol (DTT) prior to purification. The reduced plasma is run through an initial purification step, and is then chemically reacted with radioactively labeled iodoacetamide (^{14}C-IAA). This reduced and alkylated material was the LMW-AHF reported in my dissertation. After further purification, I obtained a maximum specific activity of 59.1 [units]/mg.
In the third Harris declaration, filed by Miles, Harris stated that his dissertation
accurately reports on my work in which I was able to, and did, obtain a human VIII:C preparation having a potency of 193 [units]/ml and being substantially free of VIII:RP, the ratio of VIII:C to VIII:RP being greater than 100,000 times the ratio in plasma.
The third Harris declaration was cited by the district court in support of its finding of anticipation.
The parties debate whether Harris' statement in his second declaration that his product was chemically changed from naturally occurring VIII:C, is contradicted by the statement in his third declaration that he obtained a human VIII: C preparation. Scripps also points out that neither the po

tency value nor the ratio of VIII:C to VIII:RP described in the third Harris declaration appears in the Harris dissertation. Nor does the gel pattern evidence on which the district court found that:
Harris also based his identification of his preparation upon sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE) tests [the same tests used by Dr. Fulcher]. While Harris' gel patterns do not match the gel pattern found by Dr. Fulcher, there is no evidence that if he had VIII:C, it would necessarily have the gel pattern found by Dr. Fulcher.

Scripps, 707 F.Supp. at 1551 n.6, 11 USPQ2d at 1190 n.6. Further, this finding that human Factor VIII:C, if obtained by Harris, would not necessarily have the "fingerprint" gel pattern of Dr. Fulcher, was not simply an adverse factual inference, improper on summary judgment; it was a finding of scientific fact contrary to the evidence. This finding also appears to be inconsistent with the court's finding that Dr. Harris had obtained purified Factor VIII:C because he based his identification on the same tests and gel patterns taught by Zimmerman and Fulcher. Also contradicting the court's conclusion was Scripps' evidence that the human Factor VIII:C SDS-gels of the inventors, the defendants, and non-parties to the litigation were the same, and that Dr. Harris' gel patterns were different.

Scripps contends that the court also erred in taking Dr. Harris' assertion in his third declaration that he obtained a potency of 193 units/ml and then construing the dissertation so as to find support for it. The court found support for this potency by combining (1) the potency of 2.7 units/ml reported by Harris for the sample in his Figure 9 with (2) the 71-fold concentration of an unidentified sample described on page 56 of the dissertation, and then multiplying 2.7 by 71 to obtain a potency of 191.7 units/ml. This combination of data is contrary to the statement of Dr. Harris in his second declaration that:

15. Neither is there any information from which to infer that the LMW-AHF recovered in the experiment represented by Figure 9 was the subject of [the page 56] lyophilization and reconstitution experiment.

Scripps also states that the maximum potency that the dissertation disclosed was 10 units/ml. Even crediting Dr. Harris' assertion that the ratio of AHF (antihemophilic factor) to VWF (von Willebrand factor) may have been as high as 100,000:1, Scripps calculated that this would only increase the potency of the concentrated sample on Harris' page 56 to a maximum of 10.0 units/ml. A sample having the potency of 191.7 units/ml, the value found by the district court, was calculated by Scripps to have a theoretical ratio of no less than 1,917,000:1, over 19 times higher than that asserted by Dr. Harris in his dissertation. Scripps thus argues that the court's findings are contrary to the evidence. We need not decide the correctness of these calculations and their premises, for it is clear that these issues, on which there was conflicting evidence, were not subject to summary resolution.

[7] To the extent that apparent inconsistencies among the three Harris declarations raise questions of credibility and weight, whether of witness or of interpretation of scientific data, they were improperly resolved on summary judgment. *Agosto v. INS,* 436 U.S. 748, 756 (1977); *Poller,* 368 U.S. at 473. In patent cases, questions by affidavit is disfavored. *See Poller v. Columbia Broadcasting System, Inc.,* 368 U.S. 464, 473 (1961); *United States v. Fred A. Arnold, Inc.,* 573 F.2d 605, 606 (9th Cir. 1978). Trial by document is an inadequate substitute for trial with witnesses, who are subject to examination and cross-examination in the presence of the decision-maker. *Sartor v. Arkansas Natural Gas Corp.,* 321 U.S. 620, 628 (1944).

Scripps also raised the question of whether the Harris dissertation was enabling and placed the purported anticipatory teaching of purified Factor VIII:C in possession of the public. Scripps pointed out that data in Harris' third declaration, on which the court relied, do not appear in his dissertation or in any other reference. *See Akzo N.V. v. United States Int'l Trade Comm'n,* 808 F.2d 1471, 1479, 1 USPQ2d 1241, 1245 (Fed. Cir. 1986), *cert. denied,* 482 U.S. 909 (1987) (anticipatory reference must be enabling); *In re Brown,* 329 F.2d 1006, 1011, 141 USPQ 245, 249 (CCPA 1964). The need to consider this issue, on disputed factual premises, also negates the propriety of the grant of summary judgment based on anticipation.

The grant of partial summary judgment of invalidity of claims 24, 26, and 27 for anticipation by the Harris dissertation is reversed. The issue is not amenable to summary disposition, and is remanded for trial.

IV

Best Mode

The district court granted Genentech's motion for summary judgment that claims 13, 14, 17, 18, 24-29, and 34 are invalid for failure to comply with the "best mode" requirement of 35 U.S.C. §112:

§112. The specification shall ... set forth the best mode contemplated by the inventor of carrying out his invention.
[8] Compliance with the best mode requirement is a question of fact, and invalidity for failure of compliance requires proof by clear and convincing evidence that the inventor knew of and concealed a better mode of carrying out the invention than was set forth in the specification. *See Hybritech, Inc. v. Monoclonal Antibodies, Inc.,* 802 F.2d 1367, 1369, 1379, 231 USPQ 81, 90 (Fed. Cir. 1986), *cert. denied,* 480 U.S. 947 (1987).
The concealment asserted by Genentech relates to the monoclonal antibodies that bind the Factor VIII complex in the initial step of separation from plasma. Genentech did not dispute that the specification describes the inventors' preferred method of obtaining these monoclonal antibodies. The specification describes the process, starting with injection into mice of the commercial Factor VIII concentrate, to produce antibodies against Factor VIII:RP; the preparation of the hybridomas and their screening for the desired antibodies; and the method of evaluation of the antibody's ability to bind Factor VIII:RP in the presence of salt solution that disassociates Factor VIII:C. The specification describes the properties for which the antibodies were screened, *viz.* to obtain a monoclonal antibody to Factor VIII:RP, of the IgG class, which binds greater than 90% of the VIII:RP out of plasma or concentrate, and which remains bound to the VIII:RP during saline elution of Factor VIII:C.
None of this was criticized by Genentech. There was no charge of concealment of special manipulations, or undisclosed techniques. Genentech's argument is primarily that because of the laborious nature of the process of screening monoclonal antibodies, the inventors should have voluntarily placed in a depository and made available to the public the antibody to Factor VIII:RP designated 2.2.9, which was the first effective antibody obtained by Scripps' screening, and was used by Scripps in carrying out the claimed invention.
Scripps states that the procedures in the specification produced monoclonal antibodies having the characteristics set forth in the specification, that the process of obtaining these antibodies was fully disclosed, that the data in Table I are for the 2.2.9 antibody, and that the 2.2.9 antibody was not concealed. Scripps agreed that the 2.2.9 antibody was indeed the first that had the described properties, and states that three out of the first seven antibodies screened had these properties, all obtained by routine and admittedly time-consuming procedures. It was not disputed that the inventors obtained the 2.2.9 antibody by following the procedures in the patent specification, and that these were the inventors' preferred procedures.
The district court found that the inventors concealed the 2.2.9 antibody, and that this antibody was the best mode of carrying out the invention. The court did not hold that deposit of the 2.2.9 antibody was required, although the court stated that a person of skill in the art would not have known "where to obtain it". The court made no other finding relating to concealment.
[9] A deposit was not required by the PTO during examination of either the '509 or the R'011 patents. *See* M.P.E.P. §608.01 (p)(C)(3). Nor does Genentech argue that deposit was obligatory. No protester raised the issue of deposit in connection with the reissue application. Although Genentech suggests that Scripps should have made a deposit voluntarily, failure to do so can not constitute legal or factual basis for patent invalidity.
Despite the extensive attorney argument, there were no material facts in dispute. There was no evidence by Genentech that the antibodies used by Drs. Zimmerman and Fulcher differed from those obtainable according to the process described in the specification. The laborious nature of this work was recognized in *Hybritech, supra,* and again in *In re Wands,* 858 F.2d 731, 737-38, 8 USPQ2d 1400, 1406-07 (Fed. Cir. 1988). In *Wands* this court, considering the question of enablement, declined to require the deposit of antibody samples that could be obtained by screening following the procedures in the specification.
Genentech had argued to the PTO, in its Protest against the reissue application, that the process is "easily" carried out to produce "high affinity monoclonal antibodies":
here are numerous references demonstrating the ease with which high affinity monoclonal antibodies could be obtained to Factor VIII:R[P].

In the context of best mode, on facts similar to those at bar, this court's holding in *Hybritech* settled the issue: The only evidence even colorably relating to concealment is testimony by various Hybritech employees that sophisticated, competent people perform the screening and that the screening process is labor-intensive and time-consuming. *It is not plausible that this evidence amounts to proof of concealment* of a best mode for screening or producing monoclonal anti

bodies for use in the claimed '110 process, and therefore we are of the firm conviction that the district court's finding that the best mode requirement was not satisfied is clearly erroneous.
Hybritech, 802 F.2d at 1385, 231 USPQ at 94 (emphasis added). Applying *Hybritech* to the undisputed facts, a finding of concealment can not be supported. The claims were incorrectly held invalid on this ground.
As a matter of law, we reverse the grant of partial summary judgment that claims 13, 14, 17, 18, 24-29, and 34 are invalid for failure to meet the best mode requirement. We remand with instructions that partial summary judgment be entered for Scripps on this ground.

V

Infringement

The district court found the R'011 product claims 24, 25, 28, and 29 literally infringed, explaining that "Human factor VII:C as claimed in the [product claims] therefore applies to any Factor VIII:C preparation, regardless of how produced, having the same material structural and functional characteristics as the plasma-derived preparation." The court did not distinguish between plasma-derived and recombinantly-produced human Factor VIII:C. 9 Genentech does not challenge this ruling as applied to plasma-derived VII:C.

A

Genentech appeals the district court's grant of Scripps' motion for summary judgment that the product claims are infringed by Genentech's recombinantly-produced human Factor VIII:C. Genentech states that the product claims should be construed, as a matter of law, to avoid infringement by recombinant VIII:C. Alternatively, Genentech argues that infringement is avoided by application of the reverse doctrine of equivalents. These two theories of non-infringement require different analytic approaches.
In "claim construction" the words of the claims are construed independent of the accused product, in light of the specification, the prosecution history, and the prior art. Of course the particular accused product (or process) is kept in mind, for it is efficient to focus on the construction of only the disputed elements or limitations of the claims. However, the construction of claims is simply a way of elaborating the normally terse claim language: in order to understand and explain, but not to change, the scope of the claims.
We described the workings of claim construction in *Tandon Corp. v. Int'l Trade Comm.,* 831 F.2d 1017, 1021, 4 USPQ2d 1283, 1286 (Fed. Cir. 1987):
Claim interpretation is a question of law, having factual underpinnings. When the meaning of key terms of claims is disputed ... extrinsic evidence may be adduced including testimony of witnesses, and reference may be had to the specification, the prosecution history, prior art, and other claims.
Genentech argues that the term "a human VIII:C preparation" in the R'011 product claims should be construed as limited to the Factor VIII:C obtained by separation from plasma. In essence, Genentech argues that these claims should be construed as carrying an inherent process limitation, on the basis that Scrips did not invent human Factor VIII:C, or discover its structure, or its properties as the coagulant factor in blood, but simply the process of purifying it to a higher degree of purity than was heretofore available. However, Genentech also states that it is not challenging the propriety of product claims to Factor VIII:C; and it did not do so before the district court.

While judicial attention has on occasion focused on the patentability of claims in this context, *see, e.g., In re Bergstrom,* 427 F.2d 1394, 166 USPQ 256 (CCPA 1970), Genentech, by conceding that the product claims were appropriately granted, presents inconsistent legal arguments. Genentech has not supported, as a matter of law, its requested claim construction.

B

The so-called "reverse doctrine of equivalents" is an equitable doctrine invoked in applying properly construed claims to an accused device. Just as the purpose of the "doctrine of equivalents" is to prevent "pirating" of the patentee's invention, *Graver Tank & Mfg. Co. v. Linde Air Prod. Co.,* 339 U.S. 605, 607, 608, 85 USPQ 328, 330, *reh'g denied,* 340 U.S. 845 (1950), so the purpose of the "reverse" doctrine is to prevent unwarranted extension of the claims

beyond a fair scope of the patentee's invention.
The reverse doctrine of equivalents flows from the Supreme Court's statement in *Graver Tank* that an accused article may avoid infringement, even if it is within the literal words of the claim, if it is "so far changed in principle from a patented article that it performs the same or a similar function in a substantially different way." 339 U.S. at 608-09, 85 USPQ at 330. Application of the doctrine requires that facts specific to the accused device be determined and weighed against the equitable scope of the claims, which in turn is determined in light of the specification, the prosecution history, and the prior art.
The record contained evidence of the properties of plasma-derived and recombinantly produced VIII:C, which was presented primarily by Scripps in connection with its proofs of infringement. There was deposition testimony that there were differences between VIII:C from plasma and VIII:C obtained by recombinant techniques; a Scripps' witness described the products as "apples and oranges", referring specifically to stability and formulations. The parties disputed, in connection with the summary judgment motions, the capabilities of the respective processes in terms of the purity and specific activities that were enabled for the respective products. The record on this point is extensive.
Genentech argues that its product is equitably seen as changed "in principle", particularly when viewed in the context of the prior art. Genentech asserts that the specific activities and purity that are obtainable by recombinant technology exceed those available by the Scripps process; an assertion disputed by Scripps, but which if found to be correct could provide - depending on the specific facts of similarities and differences - sufficient ground for invoking the reverse doctrine. These aspects were not discussed by the district court.
[10] The principles of patent law must be applied in accordance with the statutory purpose, and the issues raised by new technologies require considered analysis. Genentech has raised questions of scientific and evidentiary fact that are material to the issue of infringement. Consideration of extrinsic evidence is required, and summary judgment is inappropriate. *See. C.R. Bard, Inc. v. Advanced Cardiovascular Systems, Inc.,* 911 F.2d 670, 673, 15 USPQ2d 1540, 1542 (Fed. Cir. 1990).
The grant of summary judgment of infringement of claims 24, 25, 28, and 29 is reversed. The issue requires trial.

VI

Inducement to Infringe

The district court held that Genentech induced Cutter Laboratories to infringe claims 24, 25, 28, and 29 of the R'011 patent, 35 U.S.C. §271(b), through the use of both plasma-derived and recombinant Factor VIII:C. The court held:
There is no question that Genentech delivered to Cutter materials found to have infringed, including recombinant

and plasma-derived human Factor VIII:C, with the intent that Cutter itself would [develop recombinant Factor VIII:C].... There is also no doubt that Genentech intended Cutter to use plasma-derived Factor VIII:C manufactured by both Genentech and Cutter which has been found to infringe.
Scripps, 666 F.Supp. at 1394, 3 USPQ2d at 1493. The facts of the relationship between Genentech and Cutter were undisputed.
Genentech states that the district court made no specific finding of direct infringement by Cutter, a predicate to a finding of inducement to infringe. Cutter is a division of Miles, a defendant herein, and is subject to the district court's finding of infringement. Thus the court's ruling on inducement was correct, as a matter of law. Subject to our holding in Part v, the decision of the district court on this issue is affirmed.

VII

Inequitable Conduct based on the Meyer Abstract

Genentech appeals the district court's grant of summary judgment that Scripps did not engage in inequitable conduct, during examination of the application that led to the '509 patent, based on a reference authored by Meyer, Obert, Zimmerman, and Edgington entitled *Monoclonal Antibodies Specific for Factor VIII from Cellular Hybrids,* No. 395 ("the Meyer abstract").
The district court observed that the Meyer abstract was cumulative to the complete Meyer paper it summarized: The Meyer abstract was also cited in a paper authored, *inter alia,* by Dr. Meyer herself that was submitted by Scripps to the PTO as reference RS.... In contrast to the Meyer abstract, which is only one paragraph long, reference RS is 27 pages in length and much more elaborate in its disclosure....
Scripps, 666 F.Supp. at 1399-1400, 3 USPQ2d at 1496. A reference that is simply

cumulative to other references does not meet the threshold of materiality that is predicate to a holding of inequitable conduct. *Halliburton Co. v. Schlumberger Technology Corp.,* No. 90-1191, slip op. at 9 [17 USPQ2d 1834] (Fed. Cir. Feb. 15, 1991).
[11] The Meyer abstract was before the patent examiner who, according to Genentech, discovered it "on his own". When a reference has been considered by the examiner, it is not controlling how it came to the examiner's attention. The complete Meyer paper, and several other references, cited the Meyer abstract. Genentech argues that Scripps should nonetheless have brought the Meyer abstract to the examiner's specific attention, in addition to having listed the complete Meyer paper in Scripps' prior art statement. When a reference was before the examiner, whether through the examiner's search or the applicant's disclosure, it can not be deemed to have been withheld from the examiner.
Genentech presses the argument that the district court erred because the Meyer abstract was a "statutory bar", by which Genentech explains that it was published more than a year before the patent's filing date. Genentech does not explain how this was error, for the district court, like the PTO, treated as prior art both the 27-page Meyer paper and the Meyer abstract. Genentech's argument that the full paper "was not effective prior art" is contrary to law and fact, for it was published before the filing date of Scripps' '509 patent application and Scripps did not attempt to antedate the Meyer paper. It is thus immaterial when the Meyer abstract was published.
[12] Genentech also charged Scripps with inequitable conduct because Scripps originally sought claims to its monoclonal antibodies to Factor VIII:RP, and cancelled these claims after the examiner required Scripps to provide comparative data with the monoclonal antibodies described in the Meyer abstract and other references. While Genentech argues that obtaining such data was not the burden that Scripps said it was, this is irrelevant to the issue of inequitable conduct. An applicant has the absolute right to decline to do work suggested by the PTO, and to withdraw claims that had been presented for examination, without incurring liability for inequitable

conduct.
The district court reviewed the Meyer abstract's content and found, without challenge on this appeal, that:
he Meyer et al. abstract contains no disclosure of the purification of Factor VIII:C. The Meyer et al. abstract contains no disclosure indicating that any of the monoclonal antibodies could be bound to substrate particles to form an immunoa[d]sorbent for isolation and purification of VIII:C from the VIII:C/VIII:RP complex.
The court concluded:
Lacking such disclosure, the Meyer et al. abstract does not appear material to the examination of the claims that were presented in applicants' original application and issued in Patent No. 4,361,509.
Scripps, 666 F.Supp. at 1398, 3 USPQ2d at 1495. No error is ascribed to this conclusion. A reference that is material only to withdrawn claims can not be the basis of a holding of inequitable conduct. *Kimberly-Clark Corp. v. Johnson & Johnson Co.,* 745 F.2d 1437, 1457, 223 USPQ 603, 616-17 (Fed. Cir. 1984).
The party with the burden of proof of inequitable conduct must meet the clear and convincing standard. *FMC Corp. v. Manitowoc Co.,* 835 F.2d 1411, 1417 n.11., 5 USPQ2d 1112 , 1117 n.11 (Fed. Cir. 1987). Genentech did not offer evidence or legal argument whereby, even drawing all factual inferences in its favor, this standard could be met at trial, as to either materiality of the Meyer abstract, or intent to deceive or mislead. The district court's grant of partial summary judgment of no inequitable conduct based on the Meyer abstract is affirmed.

VIII

Infringement of the Product-by-Process Claims

Scripps appeals the district court's refusal to grant its motion for summary judgment of infringement of the R'011 product-by-process claims 13, 14, 17, 18, and 34. The district court denied Scripps' motion under Rule 59(e) to amend the judgment to rule on this question. Genentech argues that this denial is not appealable, and has moved for dismissal. Looking to the law of the Ninth Circuit, an appeal from a final judgment may include challenges to "all rulings which produced the judgment". *Munoz v. Small Business Administration,* 644 F.2d 1361, 1364 (9th Cir. 1981). *See Moran v. Aetna Life Insurance Co.,* 872 F.2d 296, 301 (9th Cir. 1989) (denial of a summary judgment motion is appealable after entry of final judgment); 10 C. Wright, A. Miller, and M. Kane, *Federal practice & Procedure* §2715 (2d ed. 1983). The issue is reviewable, but on an undeveloped record we consider only the questions of law.

[13] Scripps charges that Genentech's recombinantly-produced Factor VIII:C infringes the product-by-process claims, either literally or by application of the doctrine of equivalents. The district court remarked that the product-by-process claims would not be infringed unless the same process were practiced. Scripps correctly points out that this statement appears to diverge from our precedent, recognizing that this precedent arose in the context of patent prosecution, not patent infringement. *E.g., In re Thorpe,* 777 F.2d 695, 227 USPQ 964 (Fed. Cir. 1985) (holding that prior art pertinent only to product is proper ground for rejecting product-by-process claims); *In re Brown,* 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972) (in product-by-process claims the patentability of the product must be established independent of the process); *In re Bridgeford,* 357 F.2d 679, 682 n.5, 149 USPQ 55 , 58 n.5 (CCPA 1966) (recognizing that some courts in infringement litigation have construed product-by-process claims as limited to the particular process, but holding that patentability is determined independent of the process). In determining patentability we construe the product as not limited by the process stated in the claims. Since claims must be construed the same way for validity and for infringement, the correct reading of product-by-process claims is that they are not limited to product prepared by the process set forth in the claims. Thus, these claims are subject to an infringement analysis similar to that described in Part V, *ante.* Infringement of the

product-by-process claims may be considered at trial.

IX

Attorney Fees

The district court held that this was an exceptional case under 35 U.S.C. §285, apparently due to the court's rulings on inequitable conduct and failure to comply with the best mode. Holdings under §285 are reviewed for abuse of the trial court's discretionary authority, considering the court's findings and conclusions and any other appropriate factors. *See Reactive Metals & Alloys Corp. v. ESM, Inc.*, 769 F.2d 1578, 1583, 226 USPQ 821, 824 (Fed. Cir. 1985). In view of our reversal of the grants of summary judgment on the issues of best mode and inequitable conduct, the award of attorney fees flowing therefrom must be vacated. *See State Indus., Inc. v. A.O. Smith Corp.*, 751 F.2d 1226, 1238, 224 USPQ 418, 426 (Fed. Cir. 1985) (reversing ground for holding case exceptional and accompanying award of attorney fees).

X

Other Issues

We have not repeated all the arguments and issues raised by both sides, including charges of frivolity, misstatement, and worse. Encumbered by the summary nature of the proceedings, neither scientific nor evidentiary truth has risen easily to the surface. However, we *DENY* Scripps motion for sanctions against Genentech for filing a frivolous cross-appeal, for some of the issues raised were not clearly hopeless in law and fact. We also *DENY* each side's motions to strike various materials filed and to dismiss issues raised by the other.

Costs

Each party shall bear its costs.

AFFIRMED IN PART, REVERSED IN PART, VACATED IN PART, AND REMANDED

Footnotes

Footnote 1. The plaintiffs will be grouped as "Scripps" unless otherwise stated. The defendants will be grouped as "Genentech" unless otherwise stated.

Footnote 2. These consolidated appeals and cross-appeals arise from judgments and orders of the United States District Court for the Northern District of California. *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 666 F.Supp. 1379, 3 USPQ2d 1481 (N.D. Cal. 1987); *Scripps Clinic and Research Foundation v. Genentech, Inc.*, 678 F.Supp. 1429, 6 USPQ2d 1018 (N.D. Cal. 1988) (on reconsideration); *Scripps Clinic and Research Foundation v. Genentech, Inc.* 707 F.Supp. 1547, 11 USPQ2d 1187 (N.D. Cal. 1989); and *Scripps Clinic and Research Foundation v. Genentech, Inc.*, 724 F.Supp. 690, 12 USPQ2d 1157 (N.D. Cal. 1989) (Order).

Footnote 3. Drs. Zimmerman and Fulcher characterized the Factor VIII:C using a technique described as SDS-gel ("SDS" stands for sodium dodecyl sulfate) electrophoresis and production of a precipitating heterologous antibody. This work was reported in Fulcher and Zimmerman, *Proc. Nat'l Acad. Sci. USA* "Characterization of the Human Factor VIII Procoagulant Protein with a Heterologous Precipitating Antibody", Vol. 79, pp. 1648-52, March, 1982. It is not disputed that this is the first time that human Factor VIII:C was sufficiently pure to be characterized scientifically, and that the Zimmerman/Fulcher characterization is now the generally recognized "fingerprint" of Factor VIII:C.

Footnote 4. "Potency" refers to the amount of activity in a given volume of solution. For example, if 1000 units of

Factor VIII:C activity were dissolved in 1 milliliter (ml) of water, the potency of the solution would be 1000 units/ml.
"Specific activity" refers to the number of units of activity for a given mass of protein. For example, if 1000 units of Factor VIII:C activity were present in 1/2 milligram (mg) of protein, the specific activity would be 2,000 units/mg.
One "Unit" is defined as the activity present in 1 ml of normal plasma.
Footnote 5. "Fold purification" is the ratio of the specific activity of a protein sample to the specific activity of normal plasma. The Factor VIII:C specific activity of normal human plasma is known to be 0.014 units/mg. Thus the relationship is:
fold purification = specific activity/0.014.
For example, if a Factor VIII:C sample has a specific activity of 2240 units/mg, its fold purification value is 160,000. Stated another way, the sample is 160,000 times purer, as to Factor VIII:C, than normal plasma.
Footnote 6. The several defendants herein all presented arguments to the examiner, in Protests filed during the reissue proceeding, on why the product claims should not be allowed.
Footnote 7. Broadened claims by reissue must be applied for within two years of grant of the original patent. 35 U.S.C. §251. This requirement was met.
Footnote 8. The patent examiner and the PTO Office of Quality Review found that the applicant adhered to correct reissue practice, pursuant to Manual of Patent Examining Procedure §1456 (Rev. 3, 1986).
Footnote 9. In accordance with the recombinant procedure, the human Factor VIII:C gene is identified isolated and inserted into a host cell where it is replicated and from which Factor VIII:C is expressed and excreted into a culture medium. From this medium it is further purified using *inter alia* monoclonal antibodies to Factor VIII.C.

Footnote *. Circuit Judge Markey vacated the position of Chief Judge on June 27, 1990.
Footnote †. The Honorable Peter Beer, United States District Court for the Eastern District of Louisiana, sitting by designation.

- End of Case -

